

**Scope of Enquiry**  
**Item Name: Mand Spares for GIC**  
**Projects: Panki Bhusawal**

E-bids on GeM are invited from bidders for the supply of Mand spares as per detailed list of GIC Spares for Panki & Bhusawal Project, as per requirement mentioned below:

Sl. No.	Material Code & Item Description	Consignee Address	Total Quantity (set)	Date for Supply Completion
1	W96415210556  MANDATORY SPARES FOR GENERATOR INSTRUMENTATION CABINET AS PER DETAILS IN ANNEX 418119F5502 FOR PANKI 660MW PROJECT	CHIEF ENGINEER (PROJECTS) 1X660MW UPRVUNL PANKI TPS EXT. PANKI, KANPUR (UP) PIN 208020	1 Set	20.06.2024
2	W96415210602  MANDATORY SPARES FOR INSTRUMENTATION CABINET & DC STARTER AS PER DETAILS IN ANNEXURE 418119F4502 FOR BHUSAWAL 660MW	CHIEF ENGINEER/ DY.CHIEF ENGINEER (PROJECT), MSPGCL , 1X660 MW BHUSAWAL THERMAL POWER STATION UNIT-6 BHUSAWAL-(DIST-JALGAON) MAHARASHTRA, PIN-425307	1 Set	20.06.2024

**EARNEST MONEY DEPOSIT (EMD): NIL**

**Annexure-A**

**Buyers Specific Additional Terms & Conditions**  
**Projects: Panki & Bhusawal Project**


Sl. No.	Terms	Description	Your confirmation
1.	Confirmation to compliance of General terms and conditions on GeM 4.0 (Version 1.14)	General terms and conditions on GeM 4.0 (Version 1.14) or subsequent rules/policies issued by GeM shall be applicable. Please confirm.	
2.	Public Procurement (Preference to Make in India)	For this procurement, the local content to categorize, a supplier as a Class-I local supplier/ Class-II local Supplier/Non-Local supplier and purchase preference to Class-I local supplier, is as defined in Public Procurement (Preference to Make in India), PPP-MII Order No. P-45021/ 2/ 2017-PP (BE-II) dtd. 04/06/2020 issued by DPIIT. In case of subsequent Orders issued by the respective Nodal Ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT.  Vendor to submit tender specific self-certificate in line with PPP-MII Order No. P-45021/ 2/ 2017-PP (BE-II) dtd. 04/06/2020 clearly indicating percentage of local content. <b>Please Confirm &amp; provide the same.</b>	
3.	Pre-Qualification Requirements (PQR)	The Pre-Qualification Requirements have been compiled and placed at ANNEXURE-1. All the bidders should ensure submission of complete details and documents as called for in these requirements. The Offers submitted by the bidders would be scrutinized with respect to Pre-Qualification Requirements first. Techno-Commercial offer of only those bidders shall be evaluated who meet the Pre-Qualification Requirements.	

4.	<b>Special Note:</b>	ORIGINAL GR/LR IS REQUIRED AT HARIDWAR FOR REALIZATION OF PAYMENT .  MATERIAL TO BE DESPATCHED ON DOOR DELIVERY BASIS TO PANKI & BHUSAWAL SITE									
5.	<b>Special Instruction of Technical requirement</b>	The requirement of GIC Spares as per attached list,									
		Test and Guarantee certificates are required to be submitted. Please confirm.									
		<ol style="list-style-type: none"> <li>1. ANNEXURE 418119F5502 contains details of items required for Panki project.</li> <li>2. ANNEXURE 418119F4502 contains details of items required for Bhusawal project.</li> <li>3. Specification no. TG60184 (Level Switch &amp; Probe), TG60544 (Level transmitter &amp; Probe) are attached</li> </ol>									
		All items to be packed firmly in Green colored box(es) and should be clearly labelled as "Mandatory spares for Generator Instrumentation Cabinet"									
6.	<b>Specification confirmation</b>	Kindly confirm that quoted offer by you have been complied all technical requirements as given in tender documents and submit all documents to BHEL as per tender specifications and drawings without any deviations.									
7.	<b>Price basis &amp; Evaluation Currency</b>	Prices should be quoted on Ex-works freight prepaid Destination basis including of freight, packing & forwarding charges, GST etc. Item to be supplied directly to Panki & Bhusawal Project. Bidder to Confirm that the prices will remain firm during the entire validity and execution of the Project. <b>The evaluation currency for this tender shall be INR.</b>									
8.	<b>Transit Insurance</b>	Transit insurance shall be arranged by BHEL and not to be included in the prices.									
9.	<b>Evaluation criteria</b>	Evaluation shall be done on the basis of total landed cost to BHEL (up to Panki & Bhusawal project) for the complete requirement covered in the Bid. (considering ITC).  Bidders to insure applicability of ITC on Gem portal.									
10.	<b>Payment Terms</b>	<p>The payment term shall be done after issue of PRC and consignee receipt-cum acceptance certificate (CRAC) as per the below details:</p> <table border="1"> <thead> <tr> <th>Type of Bidder</th> <th>Payment Terms (Number of Days)</th> </tr> </thead> <tbody> <tr> <td>Micro &amp; Small Enterprises (MSEs)</td> <td>45 days</td> </tr> <tr> <td>Medium Enterprises</td> <td>60 days</td> </tr> <tr> <td>Non MSME</td> <td>90 days</td> </tr> </tbody> </table>	Type of Bidder	Payment Terms (Number of Days)	Micro & Small Enterprises (MSEs)	45 days	Medium Enterprises	60 days	Non MSME	90 days	
Type of Bidder	Payment Terms (Number of Days)										
Micro & Small Enterprises (MSEs)	45 days										
Medium Enterprises	60 days										
Non MSME	90 days										
11.	<b>Document submission for approval from BHEL</b>	Drawings/Data sheets/Documents/Type Test/ Quality Plan etc. as called for in the specifications shall be submitted for approval to BHEL for BHEL/customer approval within <b>15 days</b> of purchase order. Approved documents/QP are to be followed by the supplier without any price implication. Any delay in delivery on account of late submission of drawings/data sheets/QAP/documents shall be to vendors account. BHEL will arrange the approval of the drawings/data sheets/ documents within <b>15 days</b> of their receipt provided those are complete in all respect. Delays in approval shall be dealt on merit basis.									

12.	<b>MDCC clause</b>	Material shall be dispatched only after issue of material dispatch clearance certificate (MDCC) by BHEL. All test certificates and relevant documents are to be sent to BHEL before dispatch of material for issue of MDCC, which will be issued after review of test certificates etc. MDCC will be issued within 07 days of receipt of these documents once found complete in all respects. In case of any delay on account of BHEL in issuing MDCC, delivery shall be extended by no. of days in excess of 7 days taken by BHEL in issuing MDCC and delays shall be dealt on merit basis. Material is to be dispatched within 07 days of receipt of MDCC from BHEL without waiting for PO amendment.	
13.	<b>Quality Requirements</b>	<b>VENDOR TO PROVIDE O.E.M. STANDARD TEST CERTIFICATES INCLUDING INSPECTION REPORTS.</b>	
14.	<b>Guarantee</b>	Kindly confirm that all equipment shall be guaranteed for a minimum period of 12 months from the date of supply.  Please note that offers with guarantee period lesser than above mentioned guarantee period may result in rejection of the offer.	
15.	<b>Manufacturing clearance</b>	In case of ordering, vendor has to take manufacturing clearance from BHEL before starting manufacturing of material. No manufacturing is to be started without getting clearance from BHEL. Kindly confirm.	
16.	<b>Manufacturing Period</b>	Kindly quote your minimum <b>delivery period in no. of weeks</b> from the date of issue manufacturing clearance.....	
17.	<b>Liquidated Damages</b>	If the Seller/Service Provider fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% of the contract value of delayed quantity (lot wise) per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value of delayed quantity (lot wise) without any controversy/dispute of any sort whatsoever. The date of LR (Lorry Receipt) would be treated as the date of delivery for penalty purposes.	
18.	<b>Arbitration:</b>	In case of any dispute arising out of as in connection with this contract, the same shall be referred to arbitration under Arbitration & Conciliation Act 1996 of a sole arbitrator who shall be appointed by mutual consent of the parties. The seat & venue of arbitration shall be Haridwar. The proceedings shall be conducted in English. The Governing law of contract shall be the substantive law of India.	
19.	<b>Risk Purchase:</b>	In case of abnormal delays (beyond the maximum late delivery period as per Penalty clause) in supplies /defective supplies or non-fulfillment of any other terms and conditions given in Purchase Order, BHEL may cancel the Purchase Order in full or part thereof, and may also make the purchase of such material from elsewhere /alternative source at the risk and cost of the supplier. BHEL will take all reasonable steps to get the material from alternate source at optimum cost. If bidder does not agree to the above Risk Purchase Clause, BHEL reserves the right to reject the offer. In case for compelling reasons BHEL accepts the offer without acceptance of this clause by the bidder and in the eventuality of Risk Purchase, appropriate action will be taken as per BHEL extant rules. This will be without prejudice to any other right of BHEL under the contract.	
20.	<b>Firm prices</b>	Price will remain firm and fixed during entire execution of tender/supply.	
21.	<b>Right to reserve</b>	BHEL reserves the right to cancel tender or reject any or all the quotations without assigning any reasons thereof. <b>BHEL also reserves the right to increase or decrease the tendered quantities.</b>  Vendor has to take manufacturing clearance from BHEL before starting	

		manufacturing of material. In case ordered quantity is reduced at the time of manufacturing clearance, then payment shall be made accordingly as per decreased quantity. Kindly confirm.	
22.	<b>Breach of contract, Remedies and Termination</b>	Please note that in case of breach of contract, at least 10% of the contract value shall be recovered from financial remedies (i.e. available bills of the contractor, retention amount, etc. with BHEL) or legal remedies be pursued. The balance scope shall be got done independently without Risk & Cost of the failed supplier/ contractor. Further, levy of liquidated damages, debarment, termination, de-scoping, short-closure, etc., shall be applied as per provisions of the contract. <b>Please confirm.</b>	
23.	<b>Bidder Contact details</b>	Contact details of your representative: Mobile no. & Email id (minimum 2 person) 1. 2.	

Annex-1

	<b>BHARAT HEAVY ELECTRICALS LIMITED, HARIDWAR</b> Control & Instrumentation Engineering (CIE)	
	<table border="1"> <tr> <td align="center"> <b>PRE-QUALIFICATION REQUIREMENT</b> </td> <td>           DOCUMENT NO.  <b>CIE/SPR/PQR/20234311 R00</b>            Date: 05.04.24         </td> </tr> </table>	<b>PRE-QUALIFICATION REQUIREMENT</b>
<b>PRE-QUALIFICATION REQUIREMENT</b>	DOCUMENT NO. <b>CIE/SPR/PQR/20234311 R00</b> Date: 05.04.24	

- A. Indent No.: 20234311  
 B. Application: Level Switch, Level Transmitters, Digital Indicators required for spare supply

Sr. No.	PRE-QUALIFICATION REQUIREMENTS	VENDOR RESPONSE
1.	Bidder should have experience of Design, Manufacturing and Supply of GIC in Power Plants. In support BIDDER to furnish 2 nos. PO copies for supply of GIC in last 5 years from Date of Enquiry.	
2.	Bidder to confirm that the offered items shall be as detailed in BHEL drawing no. 418119F4502 & 418119F5502.	
3.	Bidder to confirm that they shall be able to furnish Test Certificates or COC of the required items after placement of PO.	

Note: Bidder to confirm specific compliance wherever asked. BHEL reserves the right to verify information submitted by Bidder. In case the information is found false/ incorrect/ incomplete, the offer shall be rejected.	
--	--

  
 Satish Kumar  
 Control & Instrumentation Engg.  
 B.H.E.L., HARIDWAR  
 (SDGM/CIE)

  
 Mayuri Katiyar  
 (Mgr/CIE)

**ANNEXURE 418119F5502, REV00**  
**MANDATORY SPARE LIST FOR 1X660 MW PANKI**  
**BHEL MATERIAL CODE NO. W96415210556**

Sl. No.	Customer Sl. No.	Description	Quantity	Unit	Item Details	Specification
1	1.05.00.H.1	LEVEL TRANSDUCER CUM MONITOR/ LEVEL TRANSMITTER CUM INDICATOR	1	No	CAPACITANCE TYPE LEVEL INDICATOR BASE MOUNTED SUITABLE FOR POWER SUPPLY 24V DC (Make NIVO)	TG60544
2	1.05.00.H.2	PROBE FOR LEVEL TRANSMITTER L=525mm (Fig 2)	1	No	PROBE FOR LEVEL TRANSMITTER (Make NIVO)	TG60544 As per Figure-2
3	1.05.00.H.3	LEVEL SWITCH (WITH BROKEN WIRE PROTECTION)	15	No	LEVEL SWITCH SUITABLE FOR POWER SUPPLY 24VDC (Make NIVO)	TG60184
4	1.05.00.H.4	LEVEL PROBE WITH ELECTRONIC INSET (Fig 3)	13	No	LEVEL PROBE for LEVEL SWITCH (Make NIVO)	TG60184 As per Figure 3
5	1.05.00.H.5	LEVEL PROBE (PRECHAMBER SCREW TYPE) (Fig 4)	2	No	LEVEL PROBE for LEVEL SWITCH (Make NIVO)	TG60184 As per Figure 4
6	1.06.00.A	PROGRAMMABLE DIGITAL INDICATOR	1	No	PROGRAMMABLE DIGITAL INDICATOR SUITABLE FOR 24VDC (Make MASIBUS)	MASIBUS Model 408M-C-U2 18-36VDC

NOTE:

1. ALL ITEMS AGAINST MANDATORY SPARES ARE TO BE PACKED SEPARATELY IN GREEN COLORED BOX (ES).
2. SPARE BOX (ES) SHOULD BE CLEARLY LABELLED AS "MANDATORY SPARES FOR DC STARTERS & INSTRUMENTATION CABINET, MAT. CODE NO. W96415210556".

-sd-  
Satish Kumar  
SDGM/CIE

-sd-  
Mayuri Katiyar  
Mgr/CIE

**ANNEXURE 418119F4502, REV00**  
**MANDATORY SPARES LIST FOR 1X660M BHUSAWAL TPS**  
**BHEL MAT. CODE NO. W96415210602**

Sl. No.	Customer Clause No.	Description	QTY	UNIT	Item Details	Specification
1	1.11.8	Level Switch	1	NO	LEVEL SWITCH SUITABLE FOR POWER SUPPLY 24VDC	TG60184 (Make NIVO)
2	1.11.8	Level Transmitter	1	NO	CAPACITANCE TYPE LEVEL INDICATOR BASE MOUNTED SUITABLE FOR POWER SUPPLY 24V DC	TG60544 (Make NIVO)
3	3.3.1	Digital Indicator-GIC	2	NO	PROGRAMMABLE DIGITAL INDICATOR SUITABLE FOR 24VDC	MASIBUS Model 408M-C-U2 18-36VDC

NOTE:

1. ALL ITEMS AGAINST MANDATORY SPARES ARE TO BE PACKED SEPARATELY IN GREEN COLORED BOX (ES).
2. SPARE BOX (ES) SHOULD BE CLEARLY LABELLED AS "MANDATORY SPARES FOR DC STARTERS & INSTRUMENTATION CABINET HWR, MAT. CODE NO. W96415210602" .

-sd-

Satish Kumar  
SDGM/CIE

-sd-

Mayuri Katiyar  
Mgr/CIE



# BHARAT HEAVY ELECTRICALS LIMITED, HARIDWAR

Control & Instrumentation Engineering (CIE)

## PRE-QUALIFICATION REQUIREMENT

DOCUMENT NO.

CIE/SPR/PQR/20234311 R00

Date: 05.04.24

A. Indent No.: 20234311

B. Application: Level Switch, Level Transmitters, Digital Indicators required for spare supply

Sr. No.	PRE-QUALIFICATION REQUIREMENTS	VENDOR RESPONSE
1.	Bidder should have experience of Design, Manufacturing and Supply of GIC in Power Plants. In support BIDDER to furnish 2 nos. PO copies for supply of GIC in last 5 years from Date of Enquiry.	
2.	Bidder to confirm that the offered items shall be as detailed in BHEL drawing no. 418119F4502 & 418119F5502.	
3.	Bidder to confirm that they shall be able to furnish Test Certificates or COC of the required items after placement of PO.	

Note: Bidder to confirm specific compliance wherever asked. BHEL reserves the right to verify information submitted by Bidder. In case the information is found false/ incorrect/ incomplete, the offer shall be rejected.

सतीश कुमार  
Satish Kumar

कन्ट्रोल एवं इन्स्ट्रुमेंटेशन अभियंता  
Control & Instrumentation Engg.  
B.H.E.L., HARIDWAR

Satish Kumar

(SDGM/CIE)

Mayuri Katiyar

(Mgr/CIE)





उत्पाद मानक

TG60184

PRODUCT STANDARD

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Page 1 Of 9

हस्ताक्षर एवं तिथि  
SIGN & DATE

सुपेर्सिडेड इन्वेंट्री नं.  
SUPERSEDED INVENTORY NO.

सुपेर्सिडेड इन्वेंट्री नं.  
SUPERSEDED INVENTORY NO.

कॉपीराइट और कॉन्फिडेंटियल  
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सुपेर्सिडेड इन्वेंट्री नं.  
SUPERSEDED INVENTORY NO.

LEVEL SWITCH AND PROBE

1.0 INTRODUCTION:

This specification covers the requirement of capacitance type level switch and probe with electronic insert suitable for oil/ water in H<sub>2</sub> medium (unless specified otherwise) in turbogenerators. The offer of level switches/ probes working on any other principle may also be offered. However, these will be acceptable subject to approval by the end user. All the items in the specification shall be sourced from the same vendor.

2.0 SCOPE:

- 2.1 A level switch in sheet steel housing with epoxy powder coated finish. It will be suitable for base mounting in the client's panel.
- 2.2 A level probe with electronic insert suitable for horizontal / vertical mounting with connection as per figure-1/2/3/4 (as specified in the enquiry/ Material code) of the specification. The flange/ thread dimensions are critical. Variations in other dimensions may be acceptable subject to prior approval of the drawings by BHEL.  
SCHEMATIC DIAGRAM for Level Switch & Probe shown at sheet 5 of 9.

3.0 COMPLIANCE WITH STANDARD: There is no national/ international standard available on the above subject. However this standard is based on BHEL's experience.

4.0 PRINCIPLE OF OPERATION :

The electronic insert mounted in probe head will convert the liquid level changes in the container into the voltage/current signal suitable for use in the switching unit. Two number SPDT contacts are provided for alarm status for external use from the Level Switch. Additionally, one number SPDT contact is provided for broken wire / malfunction status indication.

5.0 TECHNICAL REQUIREMENTS:

- 5.1 The instrument should be suitable for lubricating oil / water or the mixture of the two.
- 5.2 The internal resistance of electronic insert should be low, so that disturbance pick up in the cable has practically no influence on the working of the instrument.
- 5.3 Probe shall be suitable for horizontal or vertical mounting. All the dimensions mentioned will be met to ensure perfect matching.
- 5.4 The instrument shall be suitable for:-  
Ambient temperature : 0°C to +60 °C  
RH : 0- 95%.

हस्ताक्षर एवं तिथि SIGN & DATE	नाम NAME	हस्ताक्षर एवं तिथि SIGNATURE & DATE
PSC Number	VK Chauhan	VK Chauhan
TSX	Lalit Kumar	Lalit Kumar
CIE	Vinod Kumar	Vinod Kumar
QAX	SK Chauhan	SK Chauhan
संश्लेषित विभाग AGREED DEPT	नाम NAME	हस्ताक्षर एवं तिथि DATE & SIGNATURE
WORKED BY	BRJ LAL	BRJ LAL
AGREED BY	MAYURI	MAYURI
REV.NO. 08	SUPERSEDED	
Dt. 19/09/2015	REAFFIRM YEAR-2021	
CHANGE ADVICE NO. TGE-15-37	TGE-15-37	16/09/15
निर्माता PREPARED : CIE	जांच ISSUED : TSX	हस्ताक्षर एवं तिथि SIGNATURE & DATE
		13/12/1993

CHANGE ADVISE No. - TSX(CIE)-21-III









# उत्पाद मानक

TG60184

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## PRODUCT STANDARD

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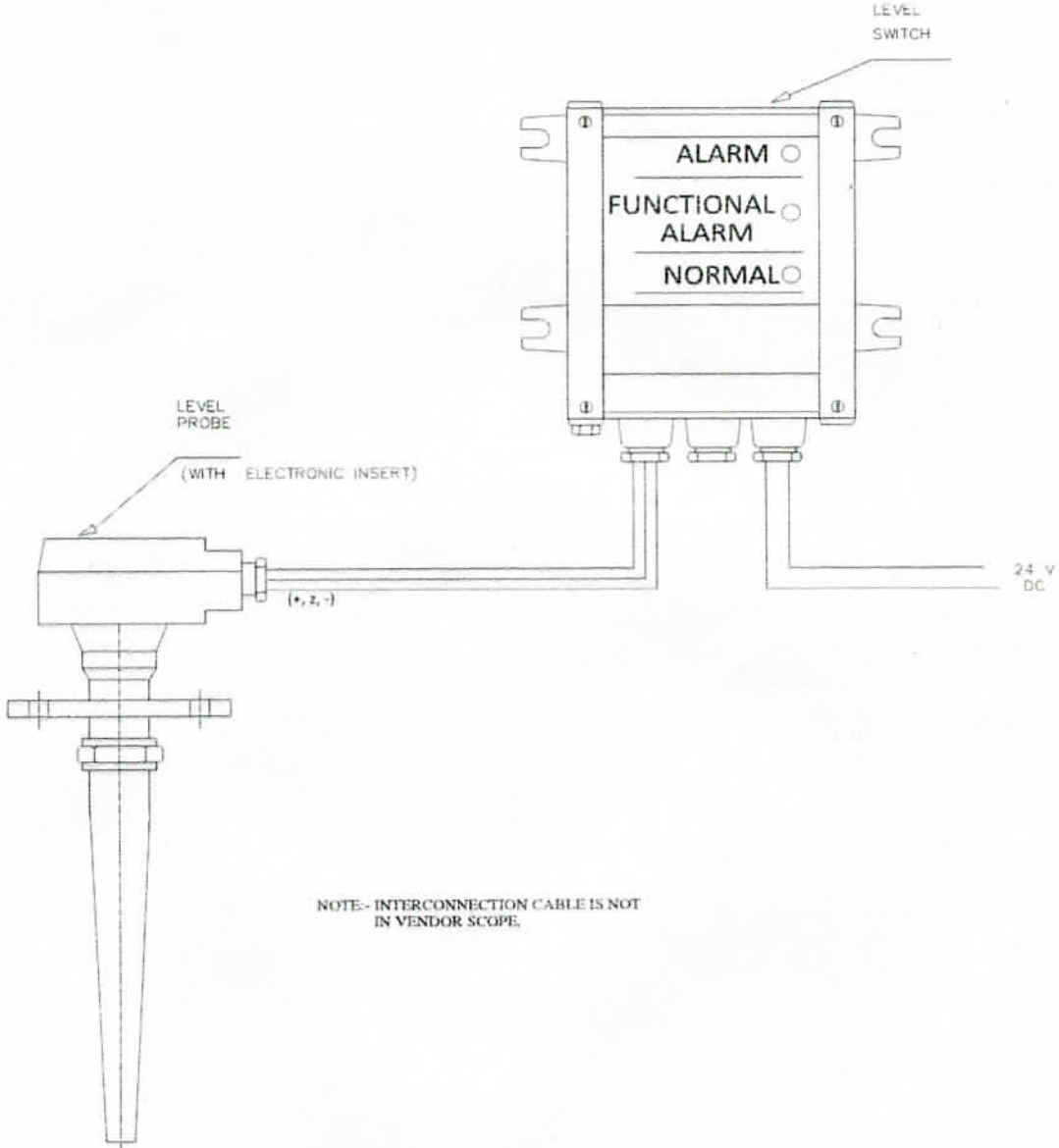
मार्गदर्शक नम्बर  
अधिकारिता संख्या

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स्वाधिकार एवं गोपनीय  
यह दस्तावेज मे की गई सूचना भारत भारती इंजीनियरिंग की संपत्ति है इसका प्रयोग एवं प्रसारण के बिना की जाये नहीं। जो कि संपत्ति के बिना से प्रतिस्पर्धा करे।

Revise no./number  
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मार्गदर्शक नम्बर  
INVENTORY NO.



NOTE:- INTERCONNECTION CABLE IS NOT IN VENDOR SCOPE.

SCHEMATIC DRG. - LEVEL SWITCH AND PROBE

REV. NO.

08

निर्माणकर्ता  
WORKED BY

BRIJ LAL

*Brij Lal* 03/10/15

जांचकर्ता  
CHECKED BY

RAJNISH

*Rajnish* 03/10/15

*P. 3507*



# उत्पाद मानक

# TG60184

## PRODUCT STANDARD

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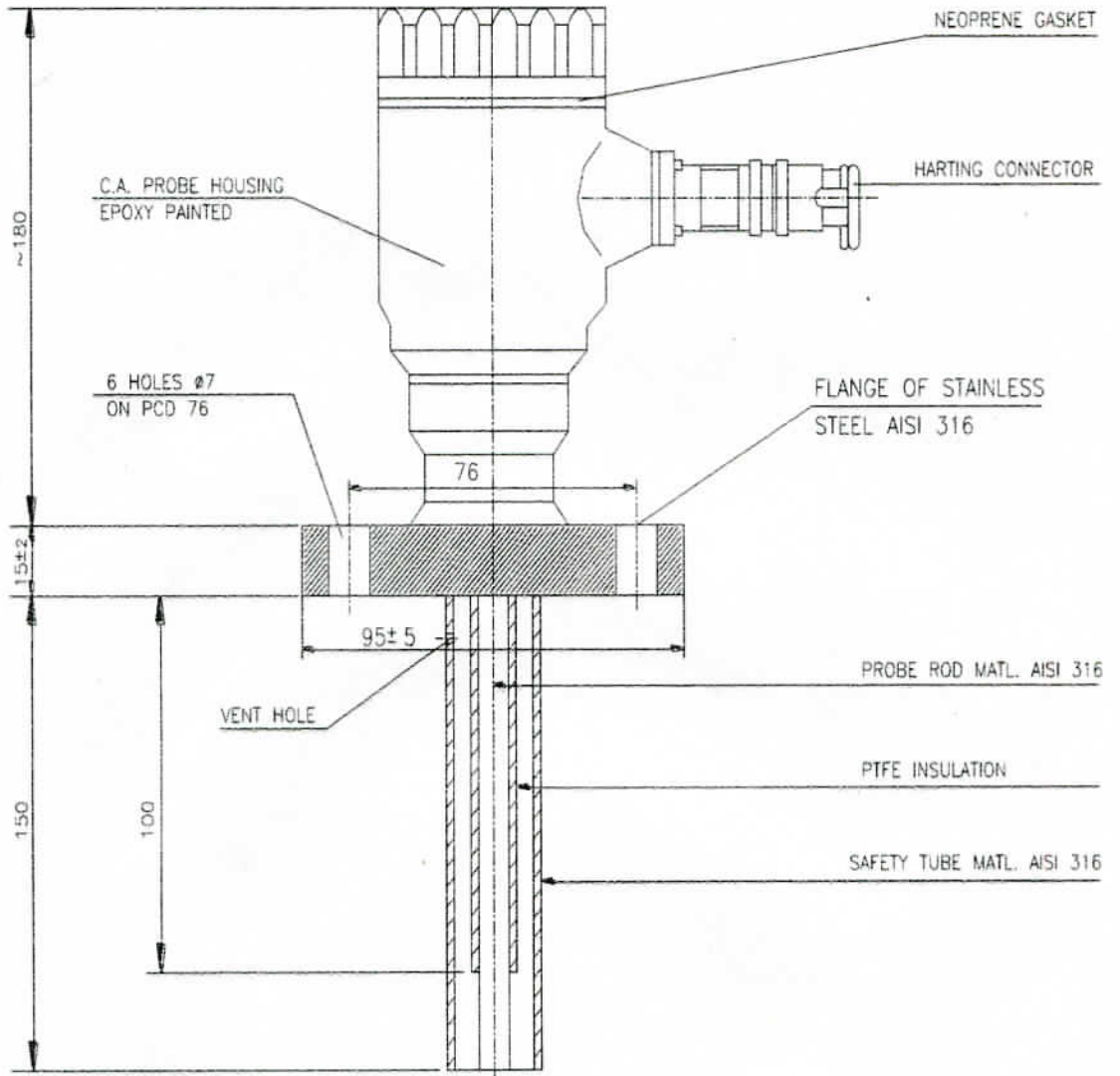
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यह दस्तावेज या इसमें प्रकाशित सूचनाएँ भारत भारती लिमिटेड की संपत्ति हैं। इनका उपयोग बिना अनुमति के किसी भी रूप में नहीं किया जा सकता है। इस दस्तावेज में प्रकाशित सूचनाओं का उपयोग बिना अनुमति के किसी भी रूप में नहीं किया जा सकता है।

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आवृत्ति संख्या  
INVENTORY NO.



LEVEL PROBE FIGURE-1 (TYPICAL ARRANGEMENT)

10/10/15

REV. NO.

08

निर्माणाकर्ता  
WORKED BY

BRIJ LAL

Brijlal

03/10/15

जांचकर्ता  
CHECKED BY

RAJNISH

Rajnish

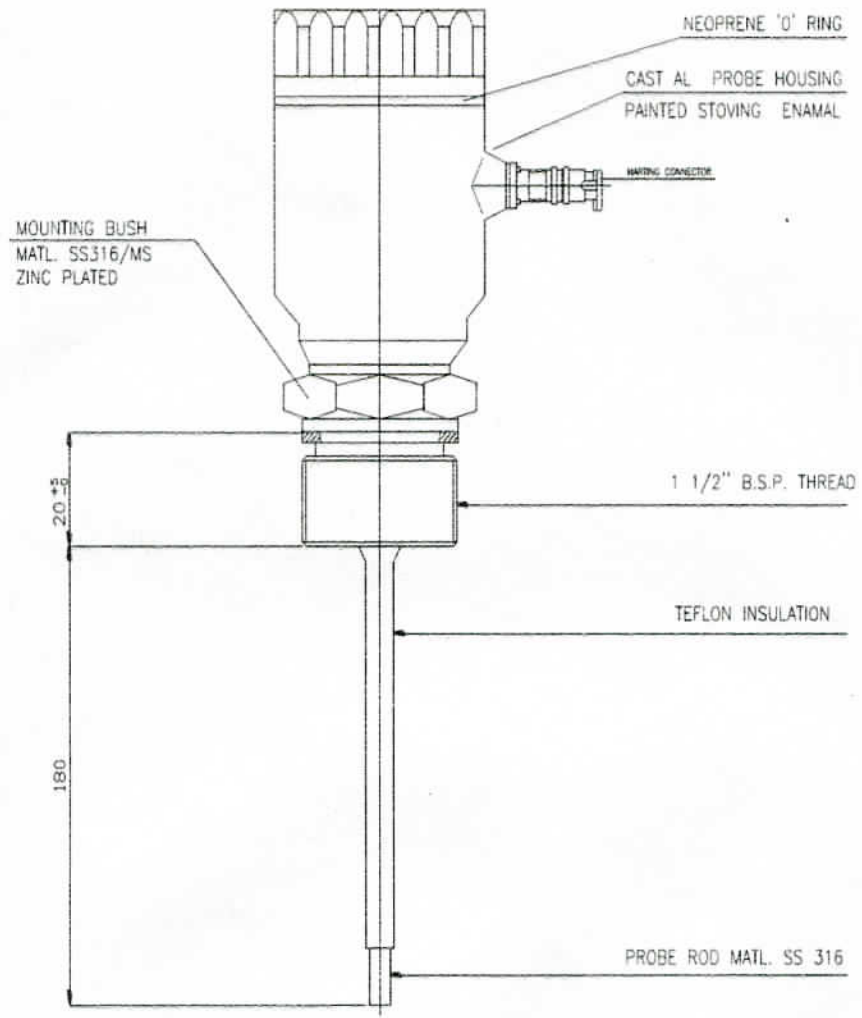
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 भारतीय भारती इ एल

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 इस दस्तावेज में दी गई जानकारी भारत भारती इ एल, मद्रास का है। इसका प्रयोग केवल भारत भारती इ एल के लिए ही किया जा सकता है। इसका प्रयोग अन्य किसी भी उद्देश्य के लिए न किया जाए।

SIGN & DATE  
 10/10/11



LEVEL PROBE FIGURE-2 (TYPICAL ARRANGEMENT)

भारतीय भारती इ एल INVENTORY NO. P-3507	REV. NO. 08
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निर्माणकर्ता WORKED BY BRIJ LAL	Brij Lal 03/10/15
जांचकर्ता CHECKED BY RAJNISH	Rajnish 03/10/15



REVISED SIGN & DATE



# उत्पाद मानक

## TG60184

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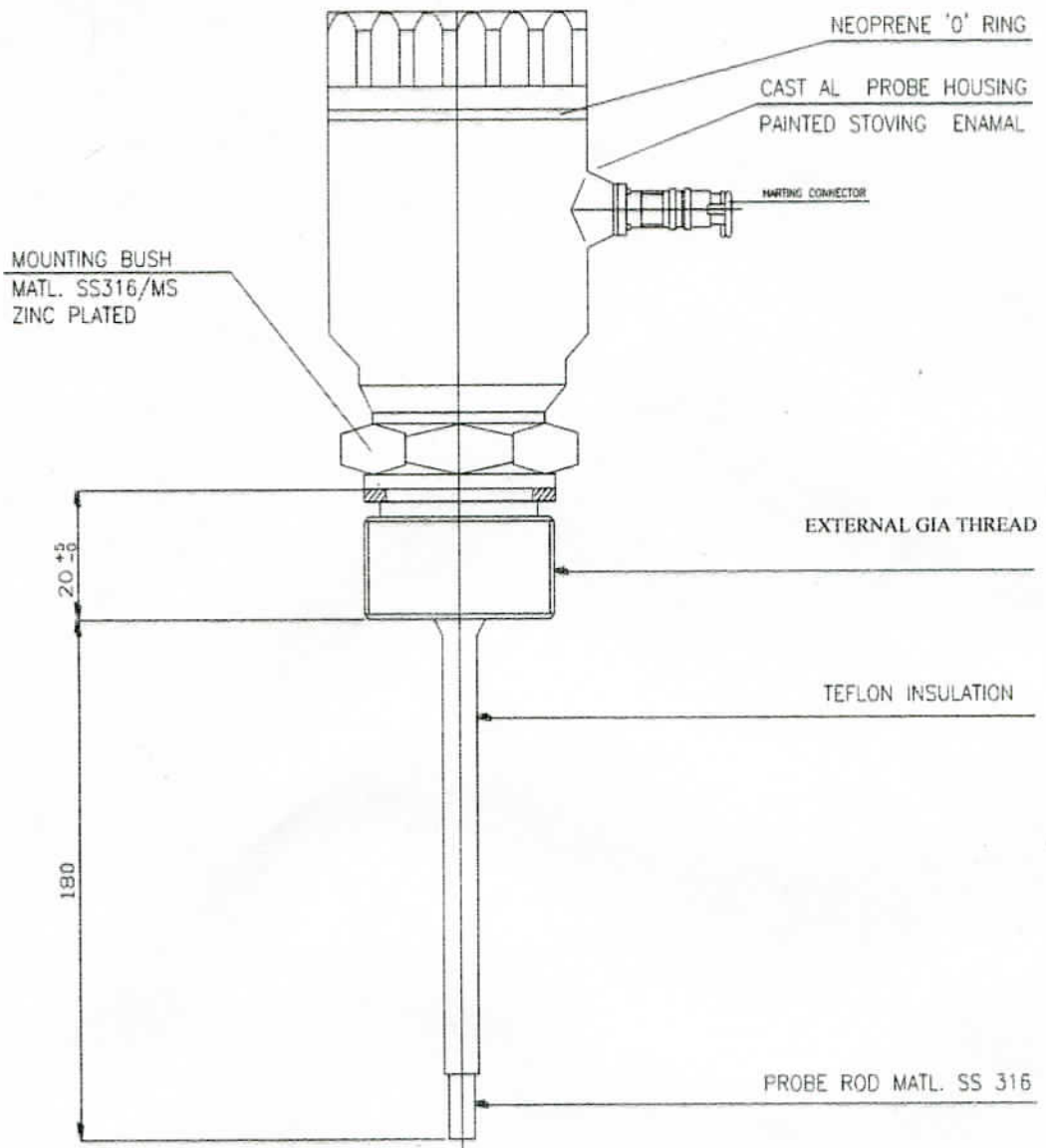
SUPERSEDES INVENTORY

संशोधित संख्या सं. संशोधित संख्या सं.

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स्वातंत्र्यधिकार एवं गोपनीय

REVISED SIGN & DATE



### LEVEL PROBE FIGURE-4 (TYPICAL ARRANGEMENT)

संशोधित संख्या सं. संशोधित संख्या सं.  
INVENTORY NO. P-3507

REV. NO.  
08

निर्माणकर्ता  
WORKED BY

BRIJ LAL

*Brij Lal* 03/10/15

जांचकर्ता  
CHECKED BY

RAJNISH

*Rajnish* 03/10/15

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संशोधन पत्र  
CHANGE ADVICE FORM



संशोधन संख्या  
CHANGE ADVICE NO.  
(1)

जारीकर्ता विभाग  
ISSUING DEPTT.  
(2)

उत्पाद का प्रकार  
TYPE OF PRODUCT  
(3)

जीएमएस/जीआ  
रखपती/सीबोम सं  
GMS / GRSP  
/CBOM NO.  
(4)

स्वीकृतिकर्ता  
APPROVED BY  
B.S. BAN  
AGM/CTA  
(6)

अधिकार  
दस्तावेज सं.  
DESIGNATION  
(DRAWING  
No. etc)  
(7)

संशोधन का विवरण  
DETAILS OF REVISION  
(8)

संशोधन का विवरण  
DETAILS OF REVISION  
(9)

प्रकार्य मद संदर्भ  
CHARGEABLE  
HEAD NO.  
(10)

अन्य सीबोम  
/जीएमएस सं  
जीएमएस/सीबोम सं  
जहां  
नाम/सं  
OTHER CBOM  
/GMS NOS./  
GRSP NOS./  
CBOM NOS.  
WHERE  
APPLICABILITY  
(15)

ROUTE  
(7a)

संशोधित  
पृष्ठ संख्या  
REVISED  
SHEET  
NOS.  
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संशोधन का  
कारण, नए  
GRADE FOR  
REASON  
OF CHANGE  
(9)

जीएमएस/जीआ  
रखपती/सीबोम सं  
GMS / GRSP  
/CBOM NO.  
(13)

संशोधन का विवरण  
DETAILS OF REVISION  
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जैसा है  
AS IT EXISTS  
(11)

जैसा होना चाहिए  
AS IT SHOULD BE  
(12)

संशोधन का विवरण  
DETAILS OF REVISION  
(11)

संशोधन का विवरण  
DETAILS OF REVISION  
(11)

CODES FOR REASON OF CHANGES:- 01- ENGINEERING ERROR INCLUDING ADDITION OF VARIANT),03- DESIGN REVIEW INCLUDING CHANGES DUE TO CHANGE ADVICE IN OTHER DOCUMENTS, 04- TO MEET MANUFACTURING REQUIREMENTS, 05- TO MEET TECHNOLOGICAL MODIFICATIONS, 06- TO SUIT CUSTOMER DEMANDS, 07 TO SUIT STATUTORY REQUIREMENTS, 08 TO REPLACE DAMAGED/ TURN OUT ORIGINALS BY A FRESH ORIGINALS ,09- ANY OTHER

AGREED सहमति

(20)

आभियांत्रिकी  
ENGG.

प्रौद्योगिकी  
TECHNOLO-  
GY

क्यालिटी  
QUALITY

जिग एवं टूल  
विभाग  
J & T DEPTT.

वेल्डिंग  
TECHNOLOGY

केंद्रीय संयंत्र  
प्रयोग  
CPL

अन्य विभाग  
OTHER DEPTT.

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पान्त कर्ता  
RECEIVED BY  
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पान्त कर्ता  
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नाम  
NAME

हस्ताक्षर  
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DATE

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हस्ताक्षर  
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जारीकर्ता  
MAYURI

हस्ताक्षर  
SIGN

दिनांक  
DATE

मानक नियंत्रण  
STD. CONTROL  
(19)

कुल पृष्ठ  
TOTAL SHEETS  
(26)



# उत्पाद मानक (हीप : हरिद्वार)

TG60544

पृष्ठ 8 का 1  
Page 1 of 8

## PRODUCT STANDARD (HEEP: HARIDWAR)

### CAPACITANCE TYPE LEVEL TRANSMITTER AND PROBE

#### 1.0 INTRODUCTION:

This specification covers the requirement of capacitance type level transmitter and probe with electronic insert suitable for monitoring level of DM water in primary water tank of large rating turbogenerators. The transmitter will have features of integrated digital display and self-diagnostics. The equipment shall be suitable for ambient temperature from 0- 60 °C and relative humidity upto 95%. All items in the specification shall be sourced from same vendor.

#### 2.0 SCOPE:

- 2.1 A capacitance type level transmitter in sheet steel housing with epoxy powder coated finish. It will be suitable for base mounting in the client's panel.
- 2.2 A level probe with electronic insert suitable for vertical mounting with flange connection as per figure-1, 2, 3 & 4 of the specification. Level transmitter and probe shall be sourced from the same vendor.

#### 3.0 COMPLIANCE WITH STANDARD:

There is no national/international standard available on the above subject. However this standard is based on BHEL's experience.

#### 4.0 PRINCIPLE OF OPERATION :

It shall work on the principle of a capacitance changes due to change in liquid level in the PW tank. The electronic insert mounted on the probe head shall convert the capacitance in to current/ voltage signals which shall provide indication of the water level in tank in scale 0-100%. The 4-20 mA output signal shall also be made available for remote application. There shall be provision to set reference value of 0% and 100% in the tank through settings at the transmitter.

#### 5.0 TECHNICAL REQUIREMENTS:

- 5.1 The instrument should be suitable for demineralized water as well as lubricating oil.
- 5.2 The internal resistance of electronic insert should be low, so that disturbance pick up in the cable has practically no influence on the working of the instrument.
- 5.3 Probe shall be suitable for vertical mounting as per figure-1, 2, 3, 4. All the dimensions mentioned will be met to ensure perfect matching.

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इस प्रलेख में दी गई सूचना भारत हेवी एलेक्ट्रिकल लिमिटेड की सम्पत्ति है इसका

दिनांक एवं हस्ताक्षर  
SIGN & DATE

सामग्री सूची संख्या  
P-6207

				नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE
TSX	Brajesh Kumar	21/11/21	अनुवादक TRANSLATED BY	BRIJ LAL RAM	21/11/21
QAX	SACHIN JAIN	22-10-21	निर्माणकर्ता WORKED BY	MAYURI KATIYAR	21/10/21
मदरम विभाग AGREED DEPTT	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	जांचकर्ता CHECKED BY	RAJNISH GUPTA	26/10/21
(SUPERSEDES)			पर्यवेक्षणकर्ता SUPERVISED BY		
			स्वीकृति APPROVED : VINOD KUMAR (AGM/ CIE)		Gr. NO. 8.10
REV.NO.	11		निर्माण PREPARED : CIE	द्वारा ISSUED : TSX	दिनांक DATE : 02.06.2000
Di	21/05/2022				
CHANGE ADVICE NO.	TSX (CIE) 22-137				



# उत्पाद मानक (हीप : हरिद्वार)

TG60544

पृष्ठ 8 का 2

## PRODUCT STANDARD (HEEP: HARIDWAR)

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यस दस्तावेज में दी गई जानकारी भारत भारी बि. लि. (भारत भारी बि. लि.) की संपत्ति है। इसका प्रयोग अन्य किसी भी उद्देश्य के लिए या इस दस्तावेज में दी गई जानकारी को किसी भी प्रकार से प्रसारित करना या इस दस्तावेज में दी गई जानकारी को किसी भी प्रकार से प्रसारित करना गैर कानूनी है।

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INVENTORY  
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- 5.4 The instrument shall be suitable for:-  
Power Consumption :  $\leq 10$  W  
Accuracy :  $\pm 2\%$  of full scale  
Power Supply : 24V DC  $\pm 10\%$  or as specified in enquiry.
- 5.5 The level probe shall be suitable for operation at vacuum of 400 mm of Hg column to 6Kg/cm<sup>2</sup> pressure.
- 5.6 The 4-20mA DC output shall be suitable for burden upto 600 Ohms.
- 5.7 The probe shall be mounted in Hydrogen atmosphere while the level transmitter shall be mounted in safe area. Accordingly, the system comprising level probe, and level transmitter shall have intrinsic safety features.
- 5.8 The transmitter shall be with built-in indicator/display.
- 5.9 The type of protection for level probe and insert shall be IP-55 (as per IS 2147) or better.
- 5.10 Repeatability will be  $\pm 0.5\%$  of full range or better.
- 5.11 Material of Probe:  
  
Probe head : Die cast Aluminum/SS AISI 316  
Top Flange /Probe rod : S.S. AISI 316  
Probe insulation : PTFE  
Probe dimensions : As per figure-1, 2, 3, 4 or as specified in enquiry
- 5.12 Two copies of complete dimensional mounting and wiring details of the equipment offered shall be sent along with offer.
- 5.13 The terminals on level transmitter probe head shall be suitable for termination of 2 wires of 1.5 mm<sup>2</sup> copper cable. The terminals of reputed make shall be used.

### 6.0 ROUTINE TESTING: Level transmitter and probe shall be subjected to following tests at supplier's works:-

- 6.1 Dimensional details/visual checking as per the approved drawing.
- 6.2 Functional checking of the equipment.
- 6.3 Burn in test for electronics (for 48 hrs. at 55 °C). If this Test has already been done during manufacturing, the certificate of compliance or Test results will be furnished for review during inspection.

### 7.0 TYPE TESTING: The type test certificates of similar equipment for the following climatic tests ( which shall not be older than 5 years) as per IEC60068 / IS9000 ( relevant parts) will be furnished along with the offer. If these are not available, the party will carry out these type tests from reputed test house before offering the equipment for inspection. In event, the party intends to conduct these tests at their Works, the same will be witnessed by BHEL representatives. These tests shall be as listed (but not limited to) below:-

- 7.1 Dry heat test
- 7.2 Damp heat test
- 7.3 Protection Class Test (IS 2147)
- 7.4 Change of temperature Test.

REV.NO.1)	निर्माणकर्ता WORKED BY	BRIJ LAL	गुल्लाल	21/10/21
	जांचकर्ता CHECKED BY	MAYURI KATIYAR	मयूरी	21/10/21





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## PRODUCT STANDARD (HEEP: HARIDWAR)

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- 13.0 SPARE PARTS:**  
Recommended spare parts for 3 years trouble free operation of the system be offered along with the main equipment. BHEL reserves the right to order the spare parts either along with the main equipment or separately, in which case validity of the offer for spare parts shall be extended by 6 months from the date of placement of order for main equipment. The offer for spares shall indicate breakup of price for each component separately.
- 14.0 IDENTIFICATION:-**  
Each assembly shall be provided with Rating Plate / Tag having engraved on it the Make, Type, BHEL code no, Application, SL no., Year of manufacture etc.
- 15.0 GUARANTEE:-**  
The equipment shall be guaranteed for a minimum period of 18 months from the date of supply or 12 months from the date of commissioning which ever is earlier.
- 16.0 STORAGE:-**  
The storage procedure for the equipment shall be specified in the offer. The equipment is likely to be stored in environment with temp range 0 to 55 °C and humidity upto 95%.
- 17.0 CROSS-REFERRED STANDARDS :**  
IS 2147; IEC 60068-2; IS 9001; AISI-316, ANSI 37.90a, IS: 8623

REV.NO.1

fuekZ.kdrkZ WORKED BY	BRIJ LAL	ब्रिज लाल	21/10/21
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**PRODUCT STANDARD (HEEP: HARIDWAR)**

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 Page 5 of 8

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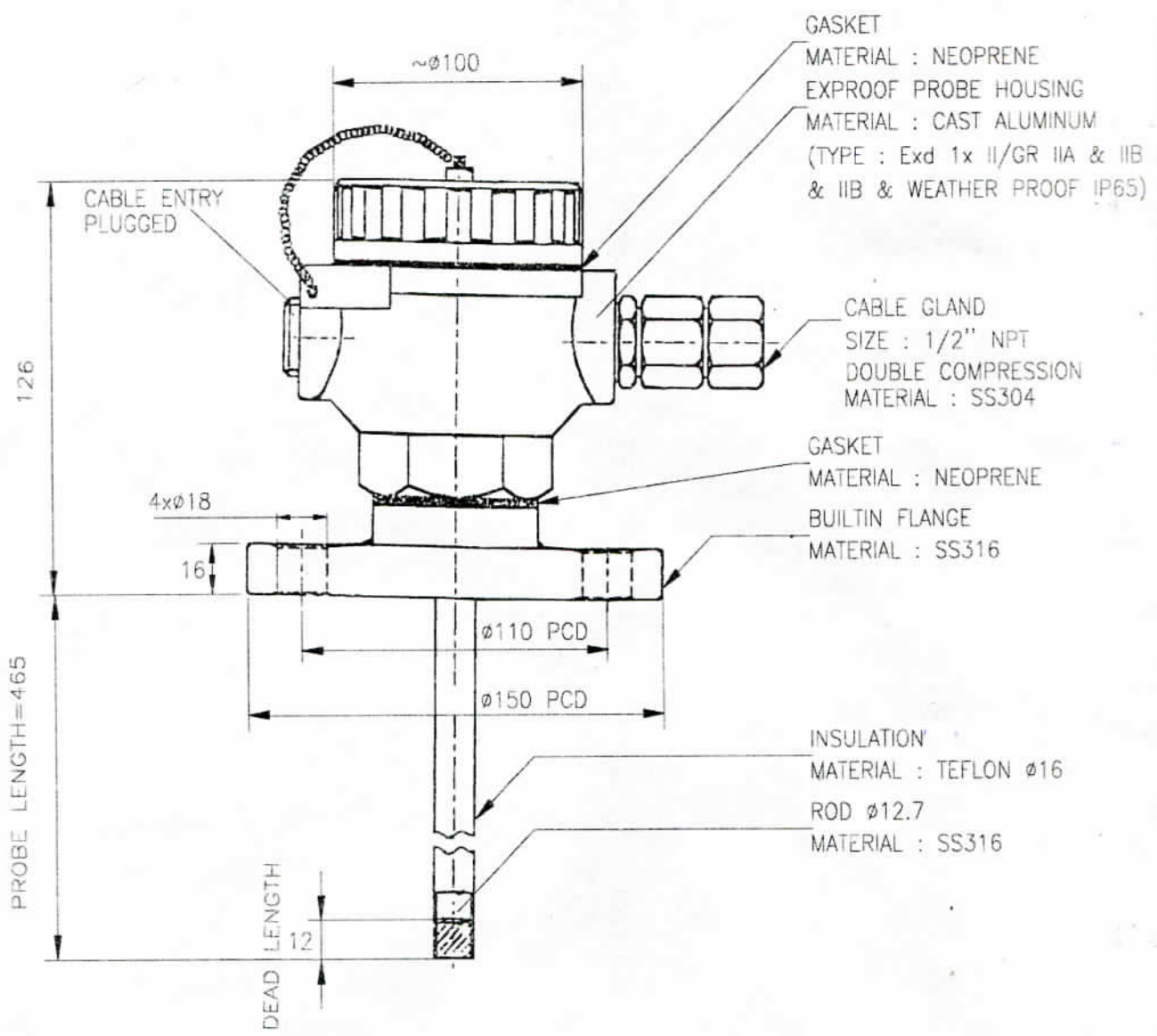
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LEVEL PROBE FIGURE-1 (TYPICAL ARRANGEMENT)

(ALL DIMENSIONS IN MM)

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fuekZ kdrkZ WORKED BY	BRIJ LAL	ब्रिज लाल	21/10/21
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PRODUCT STANDARD (HEEP: HARIDWAR)

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Page 6 of 8

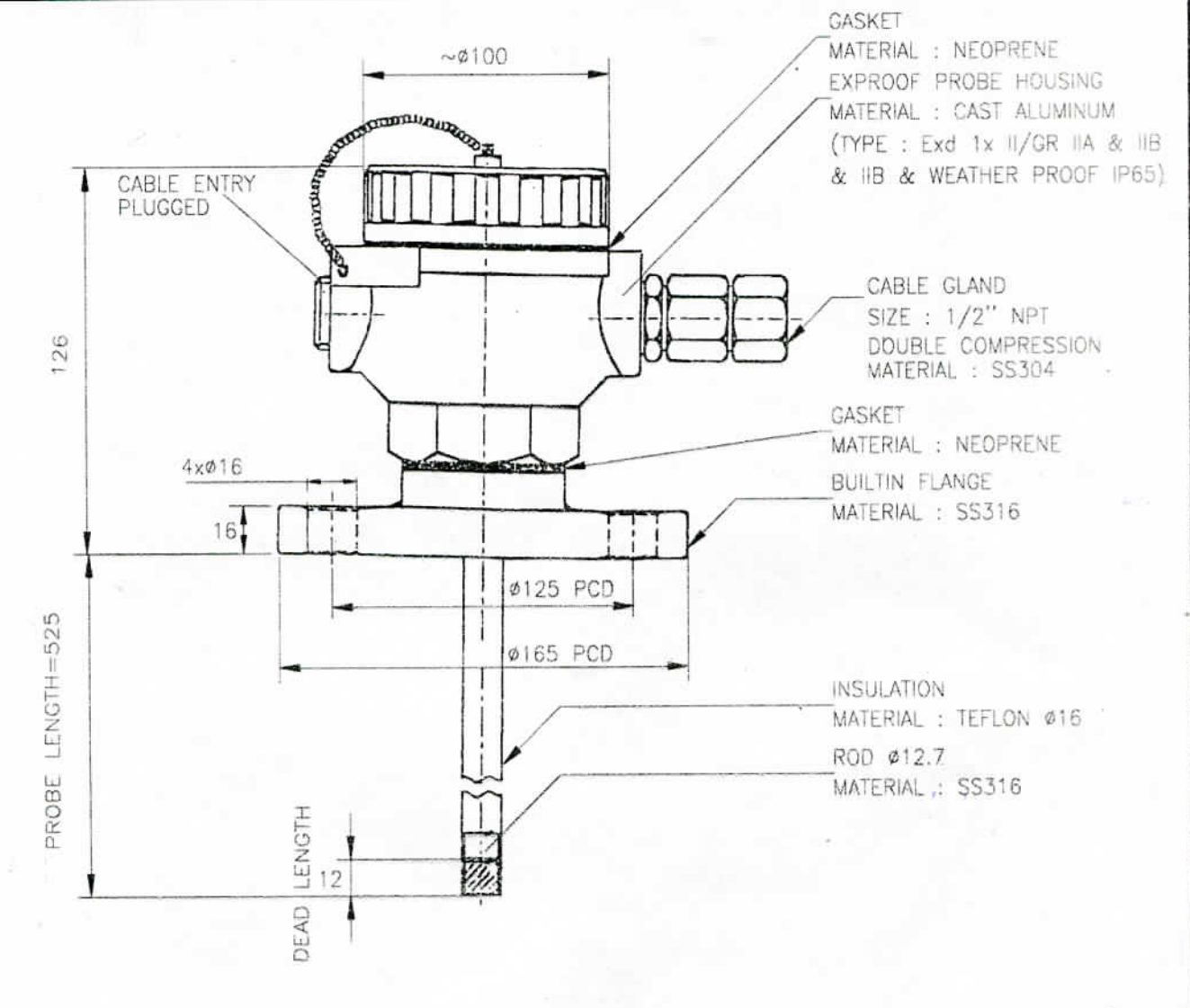
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LEVEL PROBE FIGURE-2 (TYPICAL ARRANGEMENT)

(ALL DIMENSIONS IN MM)

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**PRODUCT STANDARD (HEEP: HARIDWAR)**

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 Page 8 of 8

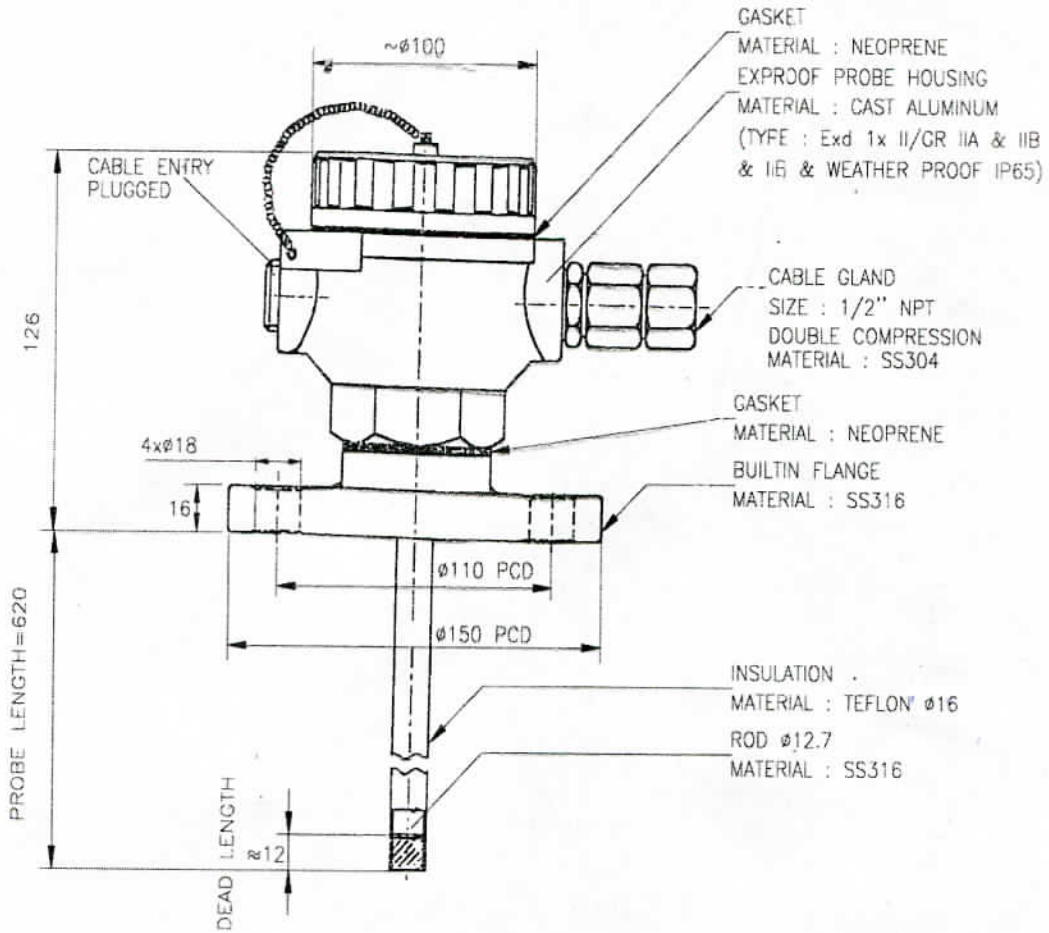
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LEVEL PROBE FIGURE-4 (TYPICAL ARRANGEMENT)

(ALL DIMENSIONS IN MM)

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MAYURI  
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